TEST REPORT

REPORT NUMBER: I21W00012-Rev2

ON

Type of Equipment:	Tracker
Type of Designation:	AT NG
Manufacturer:	Micron Electronics LLC.
FCC ID:	ZKQ-ATNG

ACCORDING TO

FCC CFR 47 Part 2.1091《Radiofrequency radiation exposure evaluation: mobile devices》
FCC CFR 47 Part1.1310《Radiofrequency radiation exposure limits》

Chongqing Academy of Information and Communication Technology

Month date, year

Jul,16, 2021

Signature

Xiang Luoyong

Director

Note:
The test results in this test report relate only to the devices specified in this report. This report shall not be reproduced except in full without the written approval of Chongqing Academy of Information and Communications Technology.

Revision Version

Report Number	Revision	Date	Memo
I21W00012	00	2021-06-30	Initial creation of test report
I21W00012-Rev1	01	2021-07-16	First change of test report
I21W00012-Rev2	02	2021-07-20	Second change of test report

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1. Test Laboratory

1.1. Testing Location

Company Name:	Chongqing Academy of Information andCommunications Technology
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Postal Code:	401336
Telephone:	0086-23-88069965
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1.2. Testing Environment

Normal Temperature:	21.3℃
Relative Humidity:	65%

1.3. Project Data

Testing Start Date:	2021-07-20
Testing End Date:	2021-07-20

1.4. Signature

	2021-07-20
Fu Bohao **(Prepared this test report)**	**Date**
	2021-07-20
Wang Lili **(Reviewed this test report)**	**Date**
	2021-07-20
Xiang Luoyong **Director of the laboratory** **(Approved this test report)**	**Date**
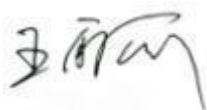
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2. Client Information

2.1. Applicant Information

Company Name:	Micron Electronics LLC.
Address /Post:	1001 Yamato Road, Suite 400, Boca Raton, FL 33431, USA
Telephone:	18885383489
Fax:	--
Email:	pcheng@micron-electronics.com
Contact Person:	Ping Cheng

2.2. Manufacturer Information

Company Name:	Micron Electronics LLC.
Address /Post:	1001 Yamato Road, Suite 400, Boca Raton, FL 33431, USA
Telephone:	18885383489
Fax:	--
Email:	pcheng@micron-electronics.com
Contact Person:	Ping Cheng

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3. Equipment Under Test (EUT) and Ancillary Equipment (AE)

3.1. About EUT

Description:	Tracker
Model name:	AT NG
GSM Frequency Band	GPRS1900,EGPRS1900
NB2 Frequency Band	Band2/4/5/12/13
CATM1 Frequency Band	Band2/4/5/12/13
WLAN Frequency Band	2.4G
GPRS Multislot Class	12
EGPRS Multislot Class	12
Note：Photographs of EUT are shown in ANNEX A of this test report.	

3.2. Internal Identification of EUT used during the test

EUT ID*	SN or IMEI	HW Version	SW Version	Date of receipt
S4	866884045647995	A513_V1_210318	P61V01.01B03.I01	2021-06-01

*EUT ID: is used to identify the test sample in the lab internally.

3.3. Internal Identification of AE used during the test

EUT ID*	SN	Description
NA	NA	NA

*AE ID: is used to identify the test sample in the lab internally.

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4. Reference Documents

4.1. Applicable Standards

The MPE report was carried out on a sample equipment to demonstrate limited compliance with FCC CFR 47 Part 2.1091.

FCC CFR 47 Part 2.1091: Radiofrequency radiation exposure evaluation: mobile devices

4.2. Test Limits

Systems operating under the provisions of this section shall be operated in a mannerthat ensures that the public is not exposed to radio frequency energy level in excesslimit for maximum permissible exposure. In accordance with 47 CFR FCC Part 2Subpart J, section 2.1091 this device has been defined as a mobile device whereby adistance of 0.2m normally can be maintained between the user and the device.

MPE for the upper tier (people in controlled environments)

Frequency Range [MHz]	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm^2)	Averaging time (minutes)
(A) Limits for Occupational/Controlled Exposure				
0.3-3.0	614	1.63	(100)*	6
3.0-30	1842/f	4.89/f	(900/f^2)*	6
30-300	61.4	0.163	1.0	6
300-1500	--	--	f/300	6
1500-100000	--	--	5	6
(B) Limits for General Population/Uncontrolled Exposure				
0.3-1.34	614	1.63	(100)*	30
1.34-30	824/f	2.19/f	(180/f^2)*	30
30-300	27.5	0.073	0.2	30
300-1500	--	--	f/1500	30
1500-100000	--	--	1.0	30

Note: f=frequency in MHz; *Plane-wave equivalent power density

For the DUT, the limits for the general public when an RF safety program is unavailable.

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5. Test Results

5.1. RF Power Output

Frequency Band	Highest Averaged Power Output(dBm)	Highest Frame-Averaged Output Power (dBm)	Antenna Gain(dBi)
GPRS 1900 4TS	31.00	27.99	0.5
EGPRS 1900 4TS	31.00	27.99	0.5
NB2 Band2	23.55	23.55	0.5
NB2 Band4	23.96	23.96	0.5
NB2 Band5	22.91	22.91	0.5
NB2 Band12	23.31	23.31	0.5
NB2 Band13	23.64	23.64	0.5
CATM1 Band2	24.74	24.74	0.5
CATM1 Band4	24.74	24.74	0.5
CATM1 Band5	24.55	24.55	0.5
CATM1 Band12	24.58	24.58	0.5
CATM1 Band13	25.42	25.42	0.5
WIFI	21.68	21.68	0.5

Notes:

1) Division Factors

To average the power, the division factor is as follows:

1TX-slot = 1 transmit time slot out of 8 time slots=> conducted power divided by (8/1) => -9.03dB

2TX-slots = 2 transmit time slots out of 8 time slots=> conducted power divided by (8/2) => -6.02dB

3TX-slots = 3 transmit time slots out of 8 time slots=> conducted power divided by (8/3) => -4.26dB

4TX-slots = 4 transmit time slots out of 8 time slots=> conducted power divided by (8/4) => -3.01dB

2) According to the conducted power as above, the measurements are performed with 1Txslots for 850MHz and 1900MHz.

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5.2. Calculation Information

For conservative evaluation consideration, only maximum power of each frequency band based on the tighter limits respectively are used to calculate the boundary power density.

Based on the FCC KDB 447498 D01 and 47 CFR §2.1091, the DUT is evaluated as a mobile device.

$$S = \frac{PG}{4\pi d^2}$$

Where

P = Power in Watts

G = Numeric antenna gain

d = Distance in meters

S = Power density in milliwatts / square centimeter

5.3. Results

Frequency range	Limit(mW/cm^2)	Results(mW/cm^2)	Verdict
GPRS 1900 4TS	1.000	0.141	Pass
EGPRS 1900 4TS	1.000	0.141	Pass
NB2 Band2	1.000	0.051	Pass
NB2 Band4	1.000	0.056	Pass
NB2 Band5	0.549	0.044	Pass
NB2 Band12	0.466	0.048	Pass
NB2 Band13	0.518	0.052	Pass
CATM1 Band2	1.000	0.067	Pass
CATM1 Band4	1.000	0.067	Pass
CATM1 Band5	0.549	0.064	Pass
CATM1 Band12	0.466	0.064	Pass
CATM1 Band13	0.518	0.078	Pass
WIFI	1.000	0.033	Pass

5.4.'Simultaneous'transmission

From'(5.3.'Results)'We'can'get'the'combination'of'the'maximum'value'of'simultaneous'transmission'as'

CATM1'Band13''and''WIFI:0.078/0.518+0.033/1.000=0.151+0.033=0.184

Eqpenwukqp<Ocz'tcvkq''20:6'ku'nguu'vjcp'3.uq'eqorplcpeg'TH'Gzrquwtg'tgswktgogpv0

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5.5. Result of GPRS 1900 4TS

Test Results: MPE Limit Calculation: the EUT'S operating frequencies @ 1850.2～1909.8 MHz; The maximum conducted is 27.99 dBm. The maximum gain is 0.5 dBi. Therefore, maximum limit for general public RF exposure: 1 mW/cm^2.

$$S = \frac{PG}{4\pi r^2}$$

P= input power of the antenna（629.506 mW）

G = antenna gain（1.122 numeric）

r = distance to the center of radiation of antenna (in meter)= 20 cm

S=(629.506*1.122)/(4 π*20^2)=0.141 mW/cm^2

Therefore, at 20 cm the spectral power density is less than the 1 mW/cm^{2}limit for uncontrolled exposure.

5.6. Result of EGPRS 1900 4TS

Test Results: MPE Limit Calculation: the EUT'S operating frequencies @ 1850.2～1909.8 MHz; The maximum conducted is 27.99 dBm. The maximum gain is 0.5 dBi. Therefore, maximum limit for general public RF exposure: 1 mW/cm^2.

$$S = \frac{PG}{4\pi r^2}$$

P= input power of the antenna（629.506 mW）

G = antenna gain（1.122 numeric）

r = distance to the center of radiation of antenna (in meter)= 20 cm

S=(629.506*1.122)/(4 π*20^2)=0.141 mW/cm^2

Therefore, at 20 cm the spectral power density is less than the 1 mW/cm^{2}limit for uncontrolled exposure.

5.7. Result of NB2 Band 2

Test Results: MPE Limit Calculation: the EUT'S operating frequencies @ 1850.0～1909.9 MHz; The maximum conducted is 23.55dBm. The maximum gain is 0.5 dBi. Therefore, maximum limit for general public RF exposure:1.0 mW/cm^2.

$$S = \frac{PG}{4\pi d^2}$$

P= input power of the antenna（226.464 mW）

G = antenna gain（1.122numeric）

r = distance to the center of radiation of antenna (in meter)=20 cm

S=(226.464*1.122)/(4 π*20^2)=0.051mW/cm^2

Therefore, at 20 cm the spectral power density is less than the 1.0 mW/cm^2 limit for uncontrolled exposure.

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5.8. Result of NB2 Band 4

Test Results: MPE Limit Calculation: the EUT'S operating frequencies @ 1710.0 ～ 1754.9MHz; The maximum conducted is 23.96dBm. The maximum gain is 0.5 dBi. Therefore, maximum limit for general public RF exposure: 1 mW/cm^2.

$$S = \frac{PG}{4\pi d^2}$$

P= input power of the antenna（248.886 mW）

G = antenna gain （1.122numeric）

r = distance to the center of radiation of antenna (in meter)=20 cm

S=(248.886*1.122)/(4 π*20^2)=0.056mW/cm^2

Therefore, at 20 cm the spectral power density is less than the 1mW/cm^2 limit for uncontrolled exposure.

5.9. Result of NB2 Band 5

Test Results: MPE Limit Calculation: the EUT'S operating frequencies @ 824.0 ～ 848.9 MHz; The maximum conducted is 22.91dBm. The maximum gain is 0.5 dBi. Therefore, maximum limit for general public RF exposure: 824.0/1500=0.549 mW/cm^2.

$$S = \frac{PG}{4\pi d^2}$$

P= input power of the antenna（195.434 mW）

G = antenna gain （1.122numeric）

r = distance to the center of radiation of antenna (in meter)=20 cm

S=(195.434*1.122)/(4 π*20^2)=0.044mW/cm^2

Therefore, at 20 cm the spectral power density is less than the 0.549mW/cm^2 limit for uncontrolled exposure.

5.10.   Result of NB2 Band 12

Test Results: MPE Limit Calculation: the EUT'S operating frequencies @ 699.0 ～ 715.9 MHz; The maximum conducted is 23.31dBm. The maximum gain is 0.5 dBi. Therefore, maximum limit for general public RF exposure: 699.0/1500=0.466 mW/cm^2.

$$S = \frac{PG}{4\pi d^2}$$

P= input power of the antenna（214.289 mW）

G = antenna gain （1.122numeric）

r = distance to the center of radiation of antenna (in meter)=20 cm

S=(214.289*1.122)/(4 π*20^2)=0.048mW/cm^2

Therefore, at 20 cm the spectral power density is less than the 0.466mW/cm^2 limit for uncontrolled

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exposure.

5.11. Result of NB2 Band 13

Test Results: MPE Limit Calculation: the EUT'S operating frequencies @ 777.0 ～ 848.9 MHz; The maximum conducted is 23.64dBm. The maximum gain is 0.5 dBi. Therefore, maximum limit for general public RF exposure: 777.0/1500=0.518 mW/cm^2.

$$S = \frac{PG}{4\pi d^2}$$

P= input power of the antenna（231.206 mW）

G = antenna gain （1.122numeric）

r = distance to the center of radiation of antenna (in meter)=20 cm

S=(231.206*1.122)/(4π*20^2)=0.052mW/cm^2

Therefore, at 20 cm the spectral power density is less than the 0.518mW/cm^2 limit for uncontrolled exposure.

5.12. Result of CATM1 Band 2

Test Results: MPE Limit Calculation: the EUT'S operating frequencies @ 1850.0 ～ 1909.9 MHz; The maximum conducted is 24.74 dBm. The maximum gain is 0.5 dBi. Therefore, maximum limit for general public RF exposure: 1.0 mW/cm^2.

$$S = \frac{PG}{4\pi d^2}$$

P= input power of the antenna（297.852 mW）

G = antenna gain （1.122numeric）

r = distance to the center of radiation of antenna (in meter)=20 cm

S=(297.852*1.122)/(4π*20^2)=0.067mW/cm^2

Therefore, at 20 cm the spectral power density is less than the 1.0 mW/cm^2 limit for uncontrolled exposure.

5.13. Result of CATM1 Band 4

Test Results: MPE Limit Calculation: the EUT'S operating frequencies @ 1710.0 ～ 1754.9 MHz; The maximum conducted is 24.74 dBm. The maximum gain is 0.5 dBi. Therefore, maximum limit for general public RF exposure: 1 mW/cm^2.

$$S = \frac{PG}{4\pi d^2}$$

P= input power of the antenna（297.852 mW）

G = antenna gain （1.122numeric）

r = distance to the center of radiation of antenna (in meter)=20 cm

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S=(297.852*1.122)/(4 π*20^2)=0.067mW/cm^2

Therefore, at 20 cm the spectral power density is less than the 1 mW/cm^2 limit for uncontrolled exposure.

5.14.　Result of CATM1 Band 5

Test Results: MPE Limit Calculation: the EUT'S operating frequencies @ 824.0 ～ 848.9 MHz; The maximum conducted is 24.55dBm. The maximum gain is 0.5 dBi. Therefore, maximum limit for general public RF exposure: 824.0/1500=0.549 mW/cm^2.

$$S = \frac{PG}{4\pi d^2}$$

P= input power of the antenna（285.102 mW）

G = antenna gain（1.122numeric）

r = distance to the center of radiation of antenna (in meter)=20 cm

S=(285.102*1.122)/(4 π*20^2)=0.064mW/cm^2

Therefore, at 20 cm the spectral power density is less than the 0.549mW/cm^2 limit for uncontrolled exposure.

5.15.　Result of CATM1 Band 12

Test Results: MPE Limit Calculation: the EUT'S operating frequencies @ 699.0 ～ 715.9 MHz; The maximum conducted is 24.58dBm. The maximum gain is 0.5 dBi. Therefore, maximum limit for general public RF exposure: 699.0/1500=0.466 mW/cm^2.

$$S = \frac{PG}{4\pi d^2}$$

P= input power of the antenna（287.078 mW）

G = antenna gain（1.122numeric）

r = distance to the center of radiation of antenna (in meter)=20 cm

S=(287.078*1.122)/(4 π*20^2)=0.064mW/cm^2

Therefore, at 20 cm the spectral power density is less than the 0.466mW/cm^2 limit for uncontrolled exposure.

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5.16. Result of CATM1 Band 13

Test Results: MPE Limit Calculation: the EUT'S operating frequencies @ 777.0～786.9 MHz; The maximum conducted is 25.42 dBm. The maximum gain is 0.5 dBi. Therefore, maximum limit for general public RF exposure: 777.0/1500=0.518 mW/cm².

$$S = \frac{PG}{4\pi d^2}$$

P= input power of the antenna（348.337 mW）

G = antenna gain （1.122numeric）

r = distance to the center of radiation of antenna (in meter)=20 cm

S=(348.337*1.122)/(4 π*20²)=0.078mW/cm²

Therefore, at 20 cm the spectral power density is less than the 0.518mW/cm² limit for uncontrolled exposure.

5.17. Result of WIFI

Test Results: MPE Limit Calculation: the EUT'S operating frequencies @ 2412.0～2484.09 MHz; The maximum conducted is 21.68 dBm. The maximum gain is 0.5 dBi. Therefore, maximum limit for general public RF exposure: 1.00 mW/cm².

$$S = \frac{PG}{4\pi d^2}$$

P= input power of the antenna（147.231 mW）

G = antenna gain （1.122numeric）

r = distance to the center of radiation of antenna (in meter)=20 cm

S=(147.231*1.122)/(4 π*20²)=0.033mW/cm²

Therefore, at 20 cm the spectral power density is less than the 1.00 mW/cm² limit for uncontrolled exposure.

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ANNEX A: EUT photograph

See the document" L710HG -External Photos".

END OF REPORT

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